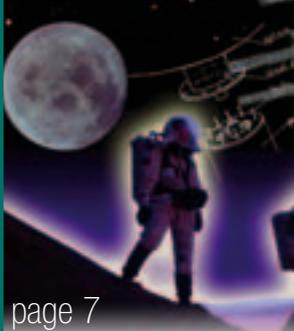


EDU news



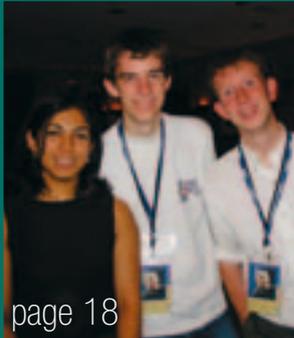
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SPACE GAME INSIDE

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Editorial

The year 2003 will be a turning point for the Agency's Space Education Programme. Based on four years of experience and activities undertaken by the Education Office and by the different Programme Directorates, a proposal for a consistent 10-year Space Education Programme will be submitted for decision to the DG.



The need for an Education Programme has been emphasised by the second report of the Long-Term Space Policy Committee (LSPC), action 18 endorsed by ESA Council in 2000 with the long-term goal *"to contribute to the creation of the talented work force needed for the 21st century by providing a European focus for education on space matters, and stimulating interest in science and technology."*

After four years of pioneering in outreach and education it was time to ensure a corporate, coherent and synergetic Space Education Programme. Such a Programme will also provide the necessary continuity and reliability of funding that is required in education.

The proposal describes an efficient mechanism to coordinate these activities inside ESA as well as with the external institutions and national space agencies. The Space Education Programme relies on a marketing approach that bridges the target groups, i.e. youngsters and teachers, with ESA knowledge, expertise and opportunities.

In parallel, recognising the declining interest among young people in science and technology, several recommendations have been formulated in different contexts by international organisations such as the UN (COPUOUS), IAF, IAA, European Science Foundation, all of which want

- *"to promote literacy and enhance rural education by improving and coordinating educational programmes and satellite-related infrastructure;*
- *to enhance capacity-building through the development of human and budgetary resources, the training and professional development of teachers, the exchange of teaching methods, materials and experience and the development of infrastructure and policy regulations."*

Recommendation Unispace III (Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space)

This issue contains a more detailed article that highlights the general approach of the space community and, in particular, a study that is being carried out by the International Academy of Astronautics and the International Astronautical Federation.

A handwritten signature in black ink, appearing to read 'Andreas Ochs'.

Head Education Office

New working group to monitor space education

Nothing is more important for the future of society than the education of its young people. This is valid both for industrialised and developing countries. We in the space community are well aware that the study of space and the use of space technology have already had a profound impact on everyday life. The role of space and its technologies will become even more important to relate to the sustainability of Earth. Future generations must be led to understand and appreciate these aspects of the world they will inhabit and guard.

It is a fact that young people are fascinated, inspired, and motivated by space and there are many existing examples of space topics being used in schools with great success in the curriculum. However, there is a general concern of a declining number of youngsters with interest in science and technology. Space-related themes have to be more present in national education programs.

Many recommendations have been put forward by groups of experts during past workshops, conferences, etc. and many activities have been undertaken, but progress is slow.

The International Academy of Astronautics (IAA), together with the Space and Education Committee of the International Astronautical Federation (IAF), have proposed to set up a joint working group to review the experience as well as the status of the actions developed from the recommendations formulated during workshops, conferences etc. on

space and education organised in recent years. The group met at UNESCO, Paris, with international experts in the field of space and education in March 2003 with a special focus on space in education in the last years of secondary education.

Further this year, on the occasion of the International Astronautical Congress which will be held in Bremen in October 2003, the group proposes to organise a plenary session with the following objectives:

- To present the synthesis of what has already been done and today's situation in terms of pilot projects and activities to introduce space in education, elaborated from the findings and the methodology developed by a preparatory workshop.
- To present international projects, identified during the preparatory workshop, designed to demonstrate the value of space in education, which will be offered to interested countries for immediate implementation.
- To present the first elements of a potential high-level agreement for introducing space in education which, under the guidance of UNESCO, could be presented to governments for formal adoption in the near future.
- To stimulate and enhance dialogue and interaction among space professionals, academic representatives and congress participants, in particular the young people.

IAF Space Education and Outreach Committee

The committee members organise the symposium on Space and Education during the annual International Astronautical Congress. The four sessions cover subjects such as ways to involve young students in hands-on education activities, comparison of existing regional structure of space education and methods used to enhance development of space education programs. A new session was recently created to explore educational outreach programmes as a means to promote education and novel uses of space for the education of the general public in the arts, communication and other non-traditional areas.

Philippe Willekens, Chairman of the Committee,
Administrator for Education Projects, ESA Paris.

IAA Commission VI on Space and Society: Culture and Education

The IAA Study Group "Bridging Space and Education" was created in 2001 by the IAA Commission VI to prepare a report of the IAA with recommendations on the mutual enrichment of space and education from kindergarten to university: Education in space and roles of space and space related activities in education.

Francois Becker
Chairman of the IAA
Study group,
Dean and Vice President
for Programs
International Space
University

ESA participates at the ECIS Annual Conference

With a 12m-long stand and a full-day workshop, the European Space Agency presented an exciting spectrum of its educational programme to the European Council of International Schools (ECIS) annual conference in Berlin from 20 to 24 November 2002.

The ECIS Annual conference is a four-day event attracting approximately 4000 teachers from schools around the world that offers a European-national or international curricula. Membership is open to any school, individual professional educator and professional support agency. It is a special opportunity for educators to gather together, to share and explore new possibilities and new developments in education.

Space workshops and materials are always enthusiastically received and this year was no exception. The recent formal inclusion of space science and cosmology in several national and international curricula brought invitations to both ESA and NASA for guest lectures.

ESA was happy to contribute with a glittering space stand, a full day specialist workshop for teachers of 16- to 18-year-olds, and a cross-curricula session for teachers in primary and middle schools.



At the stand

The continuously busy stand offered an excellent focal point for teachers to try 'hands-on' exercises, to brainstorm with ESA scientists and education experts, whilst providing an opportunity for teachers, school administrators, professional organisations, publishers and other education suppliers, and advisors at all levels to make contact with the team. Visitors to the stand came from the full subject, curricula, linguistic, ability and age spectrum and were highly motivated, appreciative and enthusiastic.



The pre-conference workshop

During the popular pre-conference workshop 'Science for the new Millennium: Astronomy and Space Technology in the science curriculum', a team of ESA education specialists and scientist colleagues presented some of ESA's many education products.

The workshop was designed for the serious subject specialist in physics, chemistry, mathematics and astronomy at degree and postgraduate levels, representing seven different national/international



For further information on ECIS see:
www.ecis.org



through satellite imaging. Eduspace experts Juerg Lichtenegger and Laurence Ghaye introduced the participants to the principles of remote sensing. The two-hour course covered the processing and interpretation of satellite data, as well as some exciting in-depth and hands-on classroom exercises. The session closed with a short illustration of how this underlying technology may be applied across the curriculum – and especially to the fields of chemistry, physics, geography and geology.

The final session of the day offered a medley of experiences from MSM. Sylvie Ijsselstein gave an account of recent educational activities in the Manned Spaceflight & Microgravity directorate, followed by Solveig Petterson's introduction to their new middle schools teaching kit. David Jarvis gave an illustrated explanation of some of the fascinating science pursued on board the International Space Station and the benefits brought to industry and society. Metal foam samples particularly intrigued his audience.

The session concluded with a guest appearance by ESA Astronaut Andre Kuipers, who shared the thrills of space with his earth-bound audience.

Everyone was most enthusiastic about the day's activities and materials; all agreed it had been a very special and profitable introduction to the conference. ESA enjoyed equal success during the following three days both at the stand and in the 'junior' cross-curricula workshop, led by Anne Brumfitt and Solveig Petterson. Teachers of this age group were delighted that ESA supports their programmes as well as those of senior curricula.



European curricula delivered in four European languages.

The morning began with the ESA/ESO Astronomy Exercises led by Lars Christiansen who took the teachers on an exciting illustrated, hands-on journey into the world of astrophysics. Delegates immersed themselves in the measurements of distances between astronomical objects and estimated the age and expansion velocity of the universe.

During the second session, teachers learned how to explore the environment

ECIS

ECIS is the largest association of international schools. It is a non-profit corporation administered by a professional staff from offices in three continents. ECIS serves students of over 65 nationalities, with widely varied cultural, religious and linguistic backgrounds. Founded in 1965 it now has over 570 international schools, both primary and secondary, around the globe. ECIS offers support at all levels year round and encourages corporate, school and individual membership.

Space Summer School Alpbach 2002

Bertram
Arbesser-Rastburg,
Eamonn Daly
ESA-ESTEC



Summer-school management and tutors at lunch

The Alpbach Space Summer School is organised by the Austrian Space Agency with the support of ESA and the national space authorities of its member states. In the 25 years of its existence it has become a well-known, highly re-

garded institution under the leadership of Professor Johannes Ortner. In two weeks of concentrated work, between 50 and 60 students from all ESA member states follow lectures on a space-related topic and work on a system study in self-organised working groups.

The topic of the 26th Summer School (from 23 July to 1 August 2002) was "Space Weather - Physics, Impacts and Predictions". It was attended by 55 students from 15 countries. During the first half of the course, 30 international experts, including ESA's David Southwood, Eamonn Daly, Richard Marsden and Bertram Arbesser-Rastburg, gave tutorials on space weather related topics such as space plasma physics and the scientific observations necessary to understand and to monitor the interaction mechanisms. The Summer School participants also learned about the impact of space weather events ("space storms") on the technical infrastructure in space and on the Earth's surface, about space weather prediction techniques and about the basics of designing space missions.

For the practical system study, the students, split in two groups, had to identify an interesting and original concept for a space weather mission or prediction centre. This concept had to be elaborated in sufficient detail and to be presented to a review panel for evaluation. The students could use the lecture notes and information from the world-wide web for accomplishing their demanding task. Joint dinners with the tutors and lecturers



Students and lecturers of the Alpbach Space Summer School 2002.

as well as weekend hikes in the mountains surrounding the picturesque village of Alpbach created an excellent team spirit.

One group designed a system to produce global real time information of Total Electron Content with the purpose of aiding satellite navigation systems, in particular during times of geomagnetic storms. The system was based on one satellite in the L1 Lagrange point, 19 low-earth orbit satellites with GNSS receivers and a data centre.

The second group elaborated a system able to give early warning about highly energetic solar particle events. The system was made up of a space segment, a data centre, prediction centre and a service centre.

Both groups arrived at impressive and original solutions. Lectures and project results are available at

<http://www.esa.int/spaceweather/Alpbach2002/> .



The mountain hike

Alpbach 2003:
"Working and
Living in Space:
from ISS to Moon
and Mars"

Check
<http://www.asa.space.at/alpbach/alpbach.htm>

... and in 2003

Held annually since 1975, the Alpbach Summer School enjoys a long tradition in providing in-depth teaching on aspects of space science and space technology with the aim of advancing the training and working experience of European graduates, post-graduate students, young scientists and engineers.

Participants are given the opportunity to expand and strengthen their knowledge of selected space issues in workshops which are part of the Summer School programme. 2003 will be the 27th Alpbach Summer School in this long-running series and will focus on the theme "Working and Living in Space: from ISS to Moon and Mars".

In the Workshops the participants will be asked to come up with ideas and designs for visionary and credible human space missions that could form the core for human spaceflight activities following the

completion of the International Space Station (ISS). Potential targets of such missions could be a return to the Moon, travels to Mars or advanced space stations at the Earth-Moon or Earth-Sun Libration Points. The Workshop teams will be guided by experts, who will act as tutors for the workshops. Lecturers will also participate in the workshops and establish a close relationship with the students by providing assistance in the definition of the missions to be de-signed. Each workshop team will present its ideas to an expert-review panel on the last day of the Summer School programme.



Student Parabolic Flight Campaign An opportunity to fly student experiments on FOTON

This could be your chance to have a weightless experience just like astronauts in space! The ESA Education Office is organising the 6th Student Parabolic Flight Campaign this summer.

This year's 30 student experiments have already been selected in February but don't miss this opportunity and be in time for next year's parabolic flight campaign.

You will need to form a group of four undergraduate students, design an origi-

nal experiment that can be carried out in microgravity conditions and find a professor willing to endorse your application.

The three best and most exciting experiments will be selected to fly on FOTON and maybe even on the International Space Station.

Feel free, feel zero-g!

For further details on the 6th Student Parabolic Flight Campaign and FOTON:

<http://www.estec.esa.nl/outreach/parabolic>
<http://www.estec.esa.nl/photon>



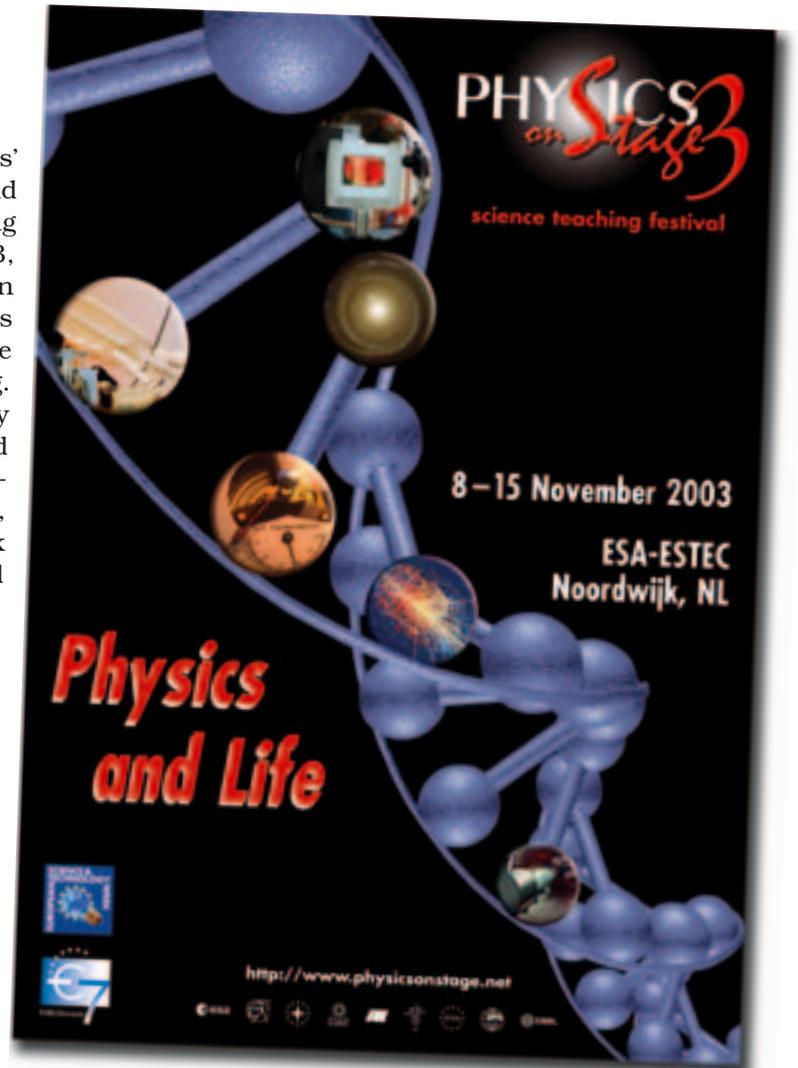
Physics on Stage 3

ESA and her EIROforum partners are proud to announce the next installment of the Physics on Stage 3 programme!

The theme for this year's project will be 'Physics and Life'. Throughout the spring and summer of 2003, teachers can take part in national activities across 22 countries to stimulate innovative science teaching. Your projects can cover any aspects of 'Physics and Life', for example: astro-biology, biotechnology, medical physics, complex systems analysis, and much more...

Past national programmes have included national competitions to identify innovative teaching methods, local and national events for teachers and specific Physics on Stage activities attached to existing national science fairs.

Outstanding participants identified at the national activities will be invited to take part in the International Physics on Stage 3 Festival, during the European Week of Science and Technology 2003, between 8-15 November.



Background Information

Physics on Stage is an initiative for European science educators. It is organised by a consortium of seven large research organisations called EIROforum who want to help teachers make physics (and other natural sciences) more attractive to young people.

Physics on Stage provides teachers with opportunities to exchange good practice, successful educational tools and innovative ideas. It also offers the teaching community a direct link to the combined expertise of Europe's leading scientists.

Physics on Stage 3 is part of the European Science and Technology Week 2003, an initiative by the European Commission.



Who is EIROforum?

The seven organisations forming the EIROforum consortium are:



The European Space Agency (ESA)



The European Organization for Nuclear Research (CERN)



The European Southern Observatory (ESO)



The European Molecular Biology Laboratory (EMBL)



The European Fusion Development Agreement (EFDA)



The European Synchrotron Radiation Facility (ESRF)



The Institut Laue-Langevin (ILL)



Visit the website for more information: <http://www.physicsonstage.net>

Space Board Game to download

A comet, Saturn, the Moon, the Milky Way, Gagarin, Armstrong, Meteosat – space always excites our curiosity.

Why not find out more about space, not as a formal school subject, but in a game? A game is always fun!



Applying this philosophy, we have designed an activity that is simple, different, versatile and easy for teachers to introduce in the classroom.

Questions, counters and the necessary images are available on our website <http://www.esa.int/education>. The questions can be found in several ESA languages.

Every month we will update the game with new questions on the ESA Education Website. So you can play again in the class. We hope you will enjoy it. **Let's play!**

Rules of the Game

The rules are very simple and can be changed by the teacher.

There can be up to five teams, but no less than two. Each team should have a maximum of six and a minimum of two players.

Starting the game

- Each team chooses a counter
- Each team throws the dice and the team with the highest throw begins
- Teams take their turns in a clockwise direction.

Moving around the board

- Each team advances around the board, according to the number shown on the dice.

- There are different instructions for each position on the board.
- If the team answers the question correctly or successfully completes the test, it carries on throwing the dice and advancing until it makes a mistake.
- The teacher picks the question or test from among the different possibilities, since they are not in order.

End of the game

- The game ends when a team lands exactly on the last square (if the number shown on the dice is too big, the counter must be moved backwards). That team wins.



Every month updates of the game, with new questions, can be found at <http://www.esa.int/education>

So you can play again in the class.



physics
&
space



draw the
universe

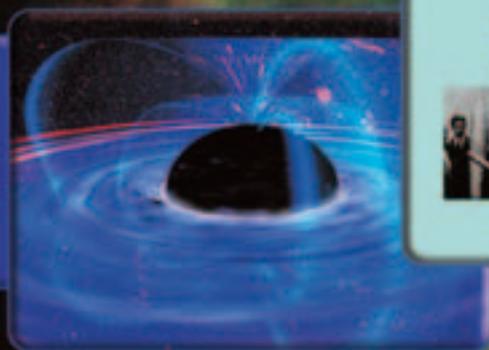
space clues



Arrival



high gravity



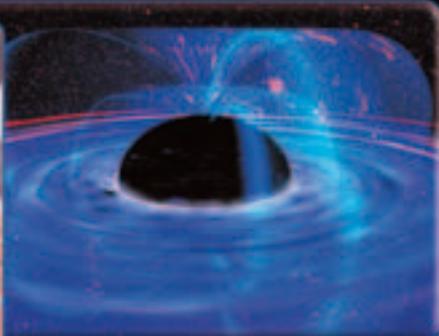
3, 2, 1, 0 LIFTOFF



space phrase

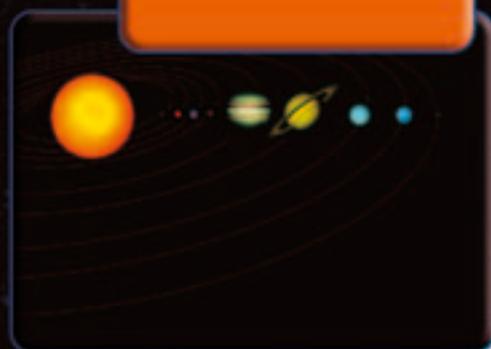
esa

zero gravity



space phrase

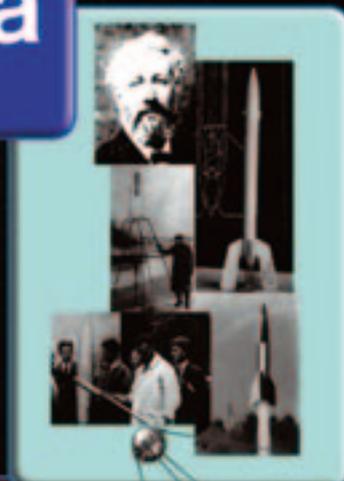
at Nebula



high gravity



space clues



draw the universe

zero gravity





Explanation of each square

Space phrase

A variety of space sentences to build in order to help discover space and learn through play.

Draw the Universe

30 seconds to guess what one of the members of your team is drawing. Talking or gestures not allowed.

Space Clues

All the teams play. If a team lands on this square, the teacher gives it the first clue. The team is allowed one answer and if it gets it wrong, there is a change of team and a new clue until the answer is found. The team that gives a correct answer then throws the dice. Good luck!

Space exploration

Since time immemorial, people have been curious about the Universe. These questions focus on the most important milestones in space exploration.

Satellites & Launchers

Life wouldn't be the same without them. These questions will help understand how they work and what they are for.

Solar System

The Sun, Saturn and its rings, Mars - they are our neighbours, but how much do we know about them?

The Universe

The Big Bang, black holes, dark matter - beyond our solar system, new mysteries are being uncovered. We will discover how much you know through these questions.

Astronauts

Have you ever dreamt of being an astronaut? Floating in space, walking on the Moon. With these questions, you can perhaps continue dreaming.

Physics & Space

This is a set of simple questions to help you understand more clearly the physics behind space, including the basic principles allowing scientists and engineers to reach space. Would you like to take part in projects like these one day? You will need to study subjects such as physics.

About ESA

An ambitious intergovernmental organisation was created in the 1970s. Now Europe is leading amazing projects, always thinking of the benefits to its citizens and mankind in general. People from different countries working together... but what do you really know about ESA?

ESA Logo

When a team lands on this square, it can throw the dice a second time. Lucky team!

Zero gravity

In zero gravity, if you touch something, it moves easily. A team landing on this square can move another team's counter backwards or forwards two places.

High Gravity

In high gravity, it is very difficult to move because of gravitational force. The team will remain on this square until its next turn, when it can escape.

The Earth, Earth Observation and the Environment

The ozone hole, the greenhouse effect, etc. To better understand such phenomena, we need satellites to watch the Earth continuously, but how much do you know about them?

The Black hole

Nothing can escape the gravitational pull of a black hole. The team must begin the game again.



Space Environments and Effects Lectures at the Kiruna Space and Environment Campus

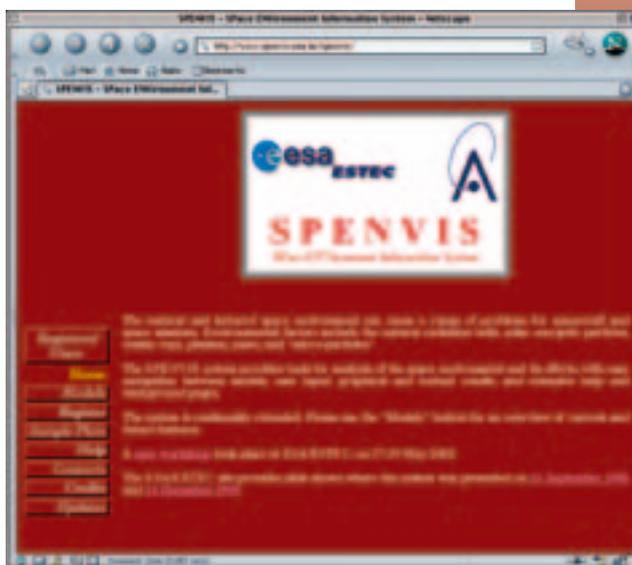
The Kiruna Space and Environment Campus (KRM) in northern Sweden hosts the Swedish National Graduate School of Space Technology of Luleå University of Technology, in association with Umeå University. Masters level courses address a broad range of topics in space science and satellite engineering. The subject of space environments and their various effects on spacecraft and instrumentation is one of the important areas in the KRM curriculum.

In 2002, some 30 students attended the course "The Spacecraft Environment Interactions". About half of the students had a theoretical background, aiming for a Master of Science in Space Engineering, while the other half had a more practical background and will become Masters of Science with a major in Space Technology.

The course includes lectures on neutral atom and vacuum environment interactions, on micrometeoroid and orbital debris environments, and on spacecraft charging. Its main focus, however, are lectures on space radiation environment and its effects for the past four years, given by ESA representatives. These cover the following topics:

- Introduction to the various types of energetic radiation, such as electrons, photons, protons, and heavy ions,
- Current knowledge of the various contributors to and sources of space radiation environment, including cosmic rays, solar event emissions, and trapped particles in planetary magnetospheres,

- Introduction to radiation interaction mechanisms in matter,
- Description of the most common radiation-induced effects in space,
- Radiation shielding methods;
- Examples of missions that have experienced various unexpected effects due to energetic particles;
- Introduction to a number of models, analytical methods, and software tools for prediction of both the environment and its effects.



The course also included exercises with the web-based, ESA-sponsored Space Environment Information System (SPENVIS). It allows comprehensive and fast environments and effects analyses with an intuitive user interface, and the use of SPENVIS by students provides an important feedback mechanism for further development and improvement of this toolkit.

More information on the Kiruna Space and Environment Campus courses is available at

<http://www.irf.se/krm/Courses.html>, and the SPENVIS toolkit can be found at <http://www.spennis.oma.be/spennis/>.

For inquiries on the radiation environments and effects lecture material, please contact ESTEC (TOS-EMA): Petteri.Nieminen@esa.int or Eamonn.Daly@esa.int

'Mission to Mars' symposium, Brussels, November 2002

Christophe Naessens

Treasurer of the
International Board
of EUROAVIA



From 2 to 10 November 2002 a technical symposium on 'A Mission to Mars' took place in Brussels, Belgium. The event was organised by students of EUROAVIA, the Europeans Students Association for Aerospace students, in collaboration with the von Karman Institute for fluid dynamics (VKI).

This international, educational, scientific and cultural event gathered 22 undergraduate student members of EUROAVIA from 8 different European countries.

17 speakers from the European Space Agency, CNES, NASA-Jet Propulsion Laboratories, Belgian governmental institutions, Flemish Aerospace Industry and the VKI gave presentations on all aspects of unmanned and manned space missions. The symposium also included laboratory demonstrations and case studies with hands-on laboratory sessions and numerical simulation exercises.

These took place in the experimental and numerical research facilities of VKI, for studying aerodynamic and heating prob-

lems in planetary atmospheric (re)entry, with Doctoral Students of the VKI acting as guides and tutors.

The first day of this event was also open to participation from industry, research centers and academia, and attracted 83 participants in total. A critical review of the failures and successes of past Mars missions was made, and the lessons learned were presented. Present and planned missions by ESA and CNES were reviewed. Especially ESA's AURORA project was interesting for the students as this project relies on student's collaboration.

The students discussed technical challenges for planetary missions, propulsion, telecommunications and payload issues as well as 'finding life on Mars'. They tackled aerothermodynamics on atmospheric re-entry and learned techniques for using computational fluid dynamics concerning this problem. One day was dedicated to the flight of ESA astronaut Frank De Winne to the International Space Station, which coincided with the symposium.

sium week. This part of the symposium was also open to high school students. Two schools participated with a total of 34 students from the last year of the math and science orientation.

The symposium was a great success. The participants had a once in a lifetime experience being able to follow lectures by engineers and scientists of some of the world's leading institutes on Mars exploration.

About the VKI

The von Karman Institute or VKI has the largest laboratory available for education in space-aerodynamics and aerothermodynamics in Europe, and the participants had a unique chance to come in contact with these facilities and more generally to taste the atmosphere of an advanced international research environment. This includes getting an experience with supersonic wind tunnels (up to Mach 14) for atmospheric entry studies, high temperature plasma wind tunnels (up to 4000 Kelvin) for testing Thermal Protection materials, and Computational Fluid Dynamics tools for flow simulation on parallel computing platforms.

About EUROAVIA

EUROAVIA is "The European Association of Aerospace Students" and was founded in 1959. EUROAVIA is present in 29 cities (universities) in 18 European countries with a total of about 1000 members.



EUROAVIA aims to:

- Stimulate contacts between university students and the aerospace industry
- Offer opportunities of acquaintance and exchange among students from different countries, thereby actively pursuing European integration
- Represent European aerospace students at an international level

Being a non-political, non-profit association, EUROAVIA is managed exclusively by students with its various activities being entirely financed by membership fees, donations, sponsorship and government support.

For more details on the VKI check <http://www.vki.ac.be>

Students for Space Medicine Cologne, October 2003

The first Space Medicine Workshop for Students will take place at ESA's European Astronaut Centre in Cologne, Germany, from 20 to 25 October 2003.

University students from all ESA Member States are invited to submit innovative proposals, endorsed by a professor, on specific space medical fields. Astronauts, space experts and scientists will participate to the workshop and lead thematic work groups.

For more information and application please visit www.estec.esa.nl/outreach/medicine

The deadline for application will be April 2003.

ESA and the World Space Week 2002 – the results



For last year's World Space Week – a UNESCO initiative commemorating the launch of Sputnik 1 in 1957 and the first treaty on space in 1967 – the Education Office coordinated a project with the theme 'Space and daily life... in 45 years – the case of the Martian Base'.

This project was developed with Parsec, a French association with lots of experience doing project work with schools and groups of children (www.astrorama.net). Freedom was given to the teachers as to the emphasis they wanted to put on the project according to the age of the children or the discipline they teach.



Among the projects we have received before the deadline of 31st December, we have been able to select four different ones from Germany, France and Portugal. You can download them as pdf files from the ESA Education web site (www.esa.int/education).



We have sent them to Spaceweek International, the WSW coordinator, and we hope they will be able to take part into the World Competition to identify the best projects received in 2002 from the whole world.

We thank all students and teachers who participated in this project, selected or not selected, and we hope more and more will be involved in the years to come.

Do not forget that we are ready to present on the Education Web site the most interesting projects on space developed by young students. Feel free to send them to education@esa.int.

Email us at
education@esa.int

First Eduspace Teachers' workshop



On 31st October 2002, EURISY formally handed over to ESA the Eduspace website during a ceremony held at ESRIN, the ESA establishment located in Frascati, Italy. More than 50 teachers from 14 countries travelled to ESRIN for the handover ceremony, which was followed by a two-day workshop on Earth observation technology, lesson planning and practical classroom exercises using Eduspace resources.

During those two days, participants were introduced to the principles of satellite remote sensing. Through exercises, they learned how to correct, enhance and interpret satellite images. They

also learned where to download images and the software to process them, along with how to use the Eduspace web site and how to easily apply its exercises in the classroom. Finally, they related all the different topics seen during these sessions to the terrain reality through a fieldwork in the region of the Colli Albani, near Rome.

They also discovered other educational material proposed by ESA, such as the International Space Station (ISS) education kit and the educational software supported by the telecommunication unit at ESRIN.



Eduspace - Explore our environment with satellite images.

Part space technology, part image analysis, part distance learning, Eduspace is mostly about satisfying the natural curiosity of young people about the world around them. It focuses on an underlying technology that can be applied in other areas – such as astronomy, chemistry, physics, geographical sciences, not just Earth observation from space.

For more information on EDUSPACE, see: www.esa.int/education/eduspace

Questions, suggestions and comments can be addressed to the EDUSPACE Helpdesk at eduspace@esa.int

Young Faces of Space



Three British participants of the European Student Outreach Programme to the IAF congress 2002, Houston, Texas

ESA Education Office organised the 4th edition of the European Student Outreach Programme to the IAF Congress (International Astronautical Federation) bringing 220 European and three Canadian students to the World Space Congress 2002 in Houston, Texas. Before departure, the students had the chance to spend one day at ESTEC.

8 October 2002: IAF@ESTEC day

The students visited the ESTEC facilities but also attended some lectures on Earth Observation, Science, Navigation, the International Space Station, and many more. Leonardo Senatore, an Italian student in Physics and Aerospace Engineering, comments: "I could

gain a general understanding of the several activities which are carried on at ESTEC, and ESA in general. Among these, I found very interesting the explanation on how a mission is designed. Besides, it was a really emotional experience to meet some astronauts, and, in general, to visit a big research centre, in which all people work together to reach something which is useful for all mankind."

9-19 October 2002: World Space Congress, Houston, Texas

During the ten days of the Congress, the students had the opportunity to attend 44 parallel scientific and technical sessions learning about the most up to date developments in a wide range of space topics, and meeting some of the top researchers in their field. They also visited the stands presenting the space science and technology industries and national agencies in the 32,500 square meters exhibition hall! "This part of the trip was the most eye-opening of all. I had no idea that the space industry was so large and that there were so many different aspects to it. This made me believe that a career in Space is definitely not just a dream,

that it is a real possibility," says Gillian Whelan, who studies Applied Physics in Ireland.

Students abstract book

A book containing the 220 abstracts written by the selected students has been produced and will be distributed in ESA and the main European space industries. ESA Education Office is very pleased to present you the "YOUNG FACE OF SPACE"!



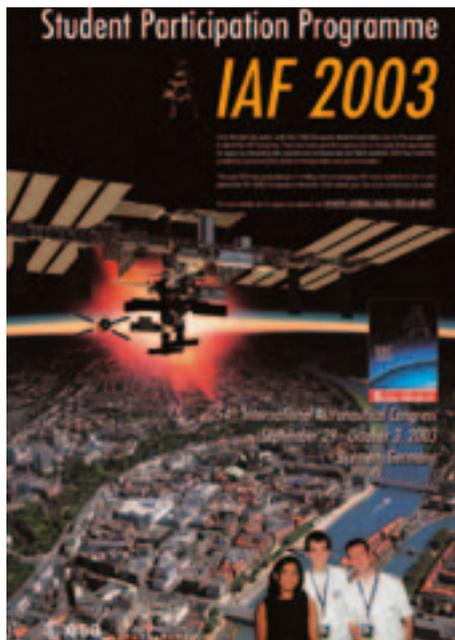
5th Student Participation Programme IAF 2003



This year the 5th edition of the Student Participation Programme will give 400 more students the chance to participate in the Congress in Bremen, Germany.

Over the last four years well over 1000 European students have taken part in this programme to attend

For more info on the "5th Student Participation Programme IAF 2003 Bremen, Germany" visit <http://www.estec.esa.nl/outreach/iaf/> or email us at student.iaf@esa.int or dorothea.czernik@esa.int



the IAF Congress. They have been given the opportunity to broaden their appreciation for space by interacting with top professionals in their field and like-minded students from across the world. ESA has made this possible by sponsoring the students' transportation and accommodation.

ESA has great pleasure in inviting and encouraging students to join in and attend the IAF 2003 Congress in Bremen. Full details on how to apply and the terms of participation are explained on our website: <http://www.estec.esa.nl/outreach/iaf>

We hope to see many of you in Bremen in September!

The ESA Education Office

Education is one of the mandatory activities of the Agency, and the Education Office tries to reach out to students, teachers and the general public throughout Europe.

Wubbo J. Ockels is the Head of the Education Office

Philippe Willekens uses his experience from four different Directorates to help with student hands-on projects and develop the Space Education Programme proposal;

Isabelle Duvaux-Béchon is responsible for primary and secondary school education, ESA internal co-ordination and the new ESA Education website development;

Piero Messina deals with universities and other higher education institutions as well as education-related organisations (e.g. Eurisy);

Corinne Flandy keeps a professional eye on our budgets, commitments, contractual arrangements etc.

Lierni Arana looks after the SSETI virtual community;

Micaela Bracciaferri contributes to the organisation and implementation of the different initiatives and projects towards European Universities and students and coordinates the Education Office newsletter;

Samuel Buisan Sanz will be feeding the ESA Education Web Portal with news, information and other contributions to make it always interesting and up to date;

Dorothea Czernik will be preparing the next ESA/IAF Student Outreach Programme that will take European students to Bremen in 2003;

Neil Melville looks after and maintains the Education Office project related web site and gives IT support to the other staff in ESTEC;

Caroline Pujol develops educational activities and material for primary schools;

Inaki Rodriguez Rebolledo maintains contacts with European Student Organisations and organises the Foton flight opportunity for students;

José Sanchez Troncoso is the expert on IT, web and databases;

Nicole Sentse is in charge of the Student Parabolic Flights Campaign that will take place in Bordeaux next July;

Eric Trottemant is responsible for educational activities in ESA's Concurrent Design Facility. He also supports students of the solar car teams (2001 & 2003);

Helen Wilson co-ordinates Physics on Stage. She is also involved with the educational activities of EIROforum.

What is ESA?

The European Space Agency is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the people of Europe.

ESA has 15 Member States: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. Canada has special status and participates in some projects under a cooperation agreement. By coordinating the financial and intellectual resources of its members, ESA can undertake programmes and activities far beyond the scope of any single European country. ESA is an entirely independent organisation, although it maintains close ties with the European Union with whom it shares a joint space strategy.

ESA's job is to draw up the European space plan and carry it through. The Agency's projects are designed to find out more about the Earth, its immediate space environment, the Solar System and the Universe, as well as to develop satellite-based technologies and promote European industries. ESA also works closely with space organisations outside Europe to share the benefits of space with the whole of mankind.

ESA has its headquarters in Paris and it is here that future projects are decided upon. However, ESA also has centres throughout Europe, each of which has different responsibilities:

- ESTEC, the European Space Research and Technology Centre, is the design hub for most ESA spacecraft and is situated in Noordwijk, the Netherlands.
- ESOC, the European Space Operations Centre, is responsible for controlling ESA satellites in orbit, and is in Darmstadt, Germany.
- EAC, the European Astronaut Centre, trains astronauts for future missions and is situated in Cologne, Germany.
- ESRIN, the European Space Research Institute, is situated in Frascati, near Rome in Italy. Its responsibilities include collecting, storing and distributing satellite data to ESA's partners and acting as the Agency's information technology centre.

In addition, ESA has liaison offices in the United States, Russia and Belgium, a launch base in French Guiana, and ground and tracking stations in various parts of the world.

ESA's mandatory activities (Science Programme and the general budget) are funded by a financial contribution from all the Agency's Member States, calculated in accordance with each country's gross national product. In addition, ESA conducts a number of optional programmes. Each country decides in which optional programme it wishes to participate and the amount of its contribution.

What's coming up:

Alpbach Space Summer School "Working and Living in Space: from ISS to Moon and Mars" for post-graduate students, young scientists and engineers organised by the Austrian Space Agency from 15 to 24 July 2003.

<http://www.asaspace.at/alpbach/alpbach.htm>

The IAF's 5th "**Student Participation Programme**" from 29 September to 3 October in Bremen, Germany. Application deadline and full details on the website

<http://www.estec.esa.nl/outreach/iaf/>

6th Student Parabolic Flight Campaign in Bordeaux from 16 to 30 July 2003.

<http://www.estec.esa.nl/outreach/parabolic/>

2003 World Space Week from 4 to 10 October 2003. This year's topic is "Horizon beyond Earth".

Student Space Exploration & Technology Initiative Workshop from 9 to 13 October 2003. All the details at <http://www.estec.esa.nl/outreach/sseti/homepage.htm>

1st Space Medicine Workshop for Students will take place at EAC (European Astronaut Centre) in Cologne from 20 to 25 October 2003. www.estec.esa.nl/outreach/medicine

Physics on Stage 3, "Physics and Life", from 8 to 15 November 2003.

<http://www.physicsonstage.net>

If you want to sign up for or inform us about a specific event please send an e-mail to education@esa.int



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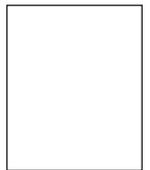
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